

REMARKS

In reply to the Office Action of May 29, 2008, Applicants have amended claims 1, 5, 8-10, and 12-13, and added new claims 14 and 15. Claims 5, 8-10, and 12-13 have been amended to correct typographical errors and/or for clarity. Accordingly, claims 1-10 and 12-15 are pending, with claim 1 in independent form.

Claims 1-10 and 12-13 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Chen (U.S. Patent No. 5,962,971, “Chen”) in view of Kambe et al. (U.S. Patent No. 6,099,798, “Kambe”) and further in view of Dutta (U.S. Patent Application Publication No. US 2003/00478156, “Dutta”). Applicants do not concede the merits of this rejection. However, to expedite prosecution, Applicants have amended claim 1 in this reply to cover light-emitting components that include, in part, a filter substance that “comprises TiO₂ in both the anatase and rutile modifications.” Support for this amendment is found in Applicants’ specification at, for example, page 3, paragraph 4, and page 6, paragraphs 3-6.

None of Chen, Kambe, or Dutta discloses the subject matter of amended claim 1. The Action admits that Chen “does not teach or disclose the composition of the filter element” (Action at page 3). Instead, the Action relies on Kambe to provide disclosure regarding the composition of filter elements, stating that Kambe’s disclosure indicates “TiO₂, ZnO, ZnO₂ and CeO₂ particles … are particularly suitable” (Action at page 3) for use in filters.

Applicants have reviewed Kambe, and note that Kambe does disclose that “[t]itanium dioxide (TiO₂), zinc oxide (ZnO), zinc dioxide (ZnO₂) and cerium dioxide (CeO₂) are of particular interest” (Kambe, col. 3, lines 20-22) for his radiation filters. However, Applicants have been unable to find any disclosure in Kambe that relates to a filter element that includes TiO₂ in both the anatase and rutile modifications. To the contrary, to the extent that Kambe discusses different modifications of TiO₂ at all, he implies that preparation conditions can be adjusted to produce TiO₂ particles in *only one* modification or the other, not a mixture of the two modifications. For example, Kambe states that “[a]lthough under certain conditions mixed phase material can be formed, laser pyrolysis generally can be effectively used to produce single phase crystalline particles … [t]he conditions of the laser pyrolysis can be varied to favor the formation

of a single, selected phase of TiO₂" (Kambe, col. 10, lines 45-49). In other words, Kambe suggests that conditions should be adjusted to produce TiO₂ particles for his filters in a single crystalline phase, not in a mixture of the anatase and rutile phases as required by claim 1. Accordingly, a person of skill in the art would find no reason based upon Kambe to provide a filter substance that includes TiO₂ in both the anatase and rutile modifications.

Applicants have determined that such filter substances can have a number of advantages. For example, TiO₂ in the anatase modification has an absorption edge between about 380 nm and about 390 nm, while the rutile modification has an absorption edge between about 410 nm and about 420 nm. Thus, in the spectral region between 380 nm and 420 nm, the absorption edge of the filter substance can be tuned by selecting the relative concentrations of the two TiO₂ modifications in the filter substance. Because the emission wavelength of the primary radiation source can vary according to the nature of the semiconductor materials used to fabricate the source, fine-tuning the filter substance can improve the efficiency of the light-emitting component.

As another example, by using a filter substance that includes both the anatase and rutile modifications of TiO₂, absorption by the nanoparticles of UV radiation can be reduced and scattering of the UV radiation by the nanoparticles can be increased, particularly for higher frequency components that undergo luminescence conversion in the component. By simultaneously adjusting the absorption coefficient and the scattering coefficient of the filter substance via adjustment of the anatase-rutile relative composition, it is possible to prevent nearly all of the UV radiation generated by the primary source from leaving the component and, at the same time, to re-direct a portion of the UV radiation that reaches the filter element back to the luminescence conversion element for conversion into radiation having an altered wavelength. As a result, the overall conversion efficiency of the light-emitting component can be increased.

Kambe does not suggest or recognize any of the foregoing reasons for including both anatase and rutile modifications of TiO₂ in a filter substance. Moreover, to the best of Applicants' knowledge, Kambe does not provide *any* reason for including both modifications of TiO₂ in a filter substance. The only disclosure in Kambe relating to phases of TiO₂ of which

Applicants are aware instead suggests that it is desirable to use only one phase of TiO₂ in a filter substance. Thus, Applicants submit that Kambe provides no reason or suggestion which would lead a person of skill in the art to use a filter substance that “comprises TiO₂ in both the anatase and rutile modifications,” as required by claim 1.

Dutta does not cure the deficiencies of Chen and Kambe with regard to claim 1, at least because Dutta also fails to disclose or suggest a filter substance that “comprises TiO₂ in both the anatase and rutile modifications.” Dutta provides no disclosure relating to any advantages of using a mixture of anatase and rutile phases of TiO₂, and a person of skill in the art, upon reading Dutta, would find no reason to combine these phases of TiO₂ in a filter element.

Accordingly, Applicants believe that amended claim 1 is patentable over Chen, Kambe, and Dutta. Reconsideration and withdrawal of the rejection of claim 1 under 35 U.S.C. § 103(a) is respectfully requested.

Each of claims 2-10 and 12-13 depends from claim 1 and is patentable over Chen, Kambe, and Dutta for at least the same reasons. Therefore, reconsideration and withdrawal of the rejections of these claims under 35 U.S.C. § 103(a) is also respectfully requested.

In this reply, new claims 14 and 15 have been added. Claim 14 covers components where “the nanoparticles have a dispersion-enhancing surface coating or a dispersion-enhancing surface modification.” Support for claim 14 is found, for example, in previously pending claim 1. Claim 15 covers components that include “a base body comprising a first electrically conductive coating, and a second electrically conductive coating isolated from the first coating, the first and second coatings positioned to each cover a portion of one or more walls of the base body … wherein the at least one primary radiation source electrically contacts each of the first and second coatings and is encapsulated by the luminescence conversion element … [and] wherein the filter element contacts each of the first and second electrically conductive coatings.” Support for claim 15 is found, for example, in Applicants’ specification at page 4, paragraph 7, and in Figure 1.

New claims 14 and 15 each depend from claim 1, and are therefore patentable over Chen, Kambe, and Dutta for at least the same reasons. Applicants also wish to point out that the

components covered by claim 15 include, in part, first and second electrically conductive coatings that “each cover a portion of one or more walls of the base body … [where] the at least one primary radiation source electrically contacts each of the first and second coatings and is encapsulated by the luminescence conversion element … [and where] the filter element contacts each of the first and second electrically conductive coatings.” None of Chen, Kambe, and Dutta discloses or suggests light-emitting components having these features.

For all of the above reasons, Applicants submit that new claims 14 and 15 are patentable over Chen, Kambe, and Dutta, and respectfully request allowance of these claims.

In view of the foregoing, Applicants ask that the application be allowed.

Canceled claims, if any, have been canceled without prejudice or disclaimer. Any circumstance in which Applicants have: (a) addressed certain comments of the Examiner does not mean that Applicants concede other comments of the Examiner; (b) made arguments for the patentability of some claims does not mean that there are not other good reasons for patentability of those claims and other claims; or (c) amended or canceled a claim does not mean that Applicants concede any of the Examiner's positions with respect to that claim or other claims.

This reply is being filed together with a Request for Continued Examination (RCE). Fees for the RCE and the Petition for Extension of Time are being filed concurrently on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges or credits to Deposit Account 06-1050, referencing Attorney Docket No. 12406-0142US1.

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Respectfully submitted,

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